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Susan C. Linner, Permit Supervisor/Reclamation Biologist TO:

Thomas L. Portle, Reclamation Soils Specialist TLP FROM:

Noranda Exploration, Inc., and Western States Minerals Corporation, Tecoma Project, ACT/003/007, Box Elder County, RE:

Utah

Rule M-10(6) Toxic Materials - TLP

In Section 1.0 of the "Technical Memorandum, Reclamation Plan," the applicant alludes to detoxification of spent heaps before regrading while detoxification of the leach pads per se is mentioned in Section 2.4.

What procedure(s) will be employed to effect detoxification?

Is this portion of the plan approved by the Department of Health?

Why is the anticipated cost of this procedure not included in the bond estimate under letter D?

What is to be the fate of leached ore during and after operations?

From Table 1 and from the Geology Appendix, it is evident that As levels are extremely high and could present a potential hazard to plant growth. Soil and plant tissue levels of As should be monitored during the course of mine operations. Please propose a plan to do so.

Elements which may be toxic in alkaline environments such as B, Mo and Se are not included in Table 1. These data must be submitted if available or acquired if not. Please consult with the Division prior to any sampling or analysis.

Page 2 Memorandum - Susan C. Linner June 21, 1984

Rule M-10(14) Soils - TLP

Remova1

The applicant indicates in Section 2.2 of the "'Technical Memorandum' that the amount of strippable topsoil will be verified this spring." The supplement received on June 12 describes the area in the draw but does not explain methods used to arrive at the figure presented. Further, it does not verify depths in either the leach pad or overburden dump areas or provide methods for estimation. In 23C, it is stated that 20 inches was the cutoff depth for alluvial soils in the draw where soil may exceed six feet in depth. Explain.

It appears that the applicant intends to sacrifice soil from the open pit area as such soils as "soils on the minesite are unsuitable due to shallowness" (Section 3). Based on the DOGM field tour observations of cuts in this area showed a six inch topsoil horizon (below the desert pavement) was available while subsoils were often found to a 20 inch depth. This statement and the implied proposal for an exemption to removal in this area is unacceptable. The revised plan should reconcile this issue.

Why are data on OM, N, P and K omitted from the application? These data must be included.

What is a meg/l which appears in Table 1 in the soils section (5.0)?

The applicant should prepare a soil stripping map from available and forthcoming (if applicable) soils chemical data.

From this map, more accurate acreage figures coupled with depth figures will yield a soil volume.

In accord with this procedure, the applicant should augment the statement that (due to soil texture variability and depth to durapan) "control will be maintained" (2.0) during stripping operations. Please elaborate on such procedures.

Storage

Without knowing the soil volume associated with the project, it is not possible to assess the topsoil stockpile storage depth or the adequacy of the storage space allocation as depicted on the "General Facilities Layout" map. The expected volume for each stockpile depicted on the above-mentioned map must be provided.

Page 3 Memorandum - Susan C. Linner June 21, 1984

The applicant indicates that annual rye and clover will be used to seed the stockpiles and that straw will be crimped into stockpile slopes. Please indicate the rate of straw application and implements to be employed in crimping. What is the expected time period between stockpiling and straw application?

The applicant should consider the use of the permanent seed mix for stockpile protection to afford a reservoir of seeds upon reclamation. In any case, at least one perennial grass should be employed in seeding the stockpile. The Division has observed good success with Sitanion in the second season in similar environments.

Redistribution

The acreage to receive a given depth of topsoil upon redistribution and the expected volume of available topsoil is ambigious. For example, in the supplement to the MR-1, it is stated that one to two feet of soil will be stripped while 18 inches is indicated in the "Technical Memorandum" (2.1), but in 23C (1) of the MR-1 replacement depth is cited as only six inches, Please clarify.

In areas which would appear to pose more difficult reclamation challenges lesser amounts of topsoil redistribution are proposed (i.e., eight inches to one foot and six inches for the leach pads and waste dump, respectively). Depths of replacement over potentially toxic and coarse materials must be reevaluated. If the average stripping depth is 18 inches, the allocation of soil as proposed above is difficult to understand.

Should the variance request for the open pit be denied, the applicant will need to reevaluate the acreage to be reclaimed.

In any case, the applicant must clearly represent the volume of soil available, the acreage to receive topsoil as well as the variability of replacement depths by specific area.

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